Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-9 (Canceled)

Claim 10 (Currently Amended): A semiconductor device produced in accordance with the method of claim 23 [[9]].

Claim 11 (Currently Amended): The method of controlling semiconductor manufacturing equipment of claim 23 [[9]], wherein the ~~at least one parameter~~ plurality of data is plasma emission intensity.

Claim 12 (Currently Amended): The method of controlling semiconductor manufacturing equipment of claim 23 [[9]], further comprising generating an alarm when the Mahalanobis distance exceeds the threshold value.

Claims 13-16 (Canceled)

Claim 17 (Currently Amended): The method of controlling semiconductor manufacturing equipment of claim 23 [[13]], further comprising:

standardizing the plurality of data obtained by said sampling to provide standardized data used during said generating a correlation matrix,

wherein [[the]] said standardizing ~~calculator~~ uses an equation

$$Y_{n\cdot m} = (Y'_{n\cdot m} - Ave_n)/\sigma_n,$$

wherein $Y'_{n\cdot m}$ is a sample data at an appointed time X_n in m time sampling, Ave_n is an average of a group of sample data measured at time X_n, σ_n is a standard deviation of data at time X_n, and $Y_{n,m}$ is a standardized sample value at X_n,

whereby n is an integer from 1 to n and m is an integer from 1 to m.

Claim 18 (Currently Amended): The method of controlling semiconductor manufacturing equipment of claim 17, wherein [[the]] said generating a correlation matrix ~~calculator~~ uses an equation

$$r_{ij} = r_{ji} = \frac{1}{m}\sum_{p=1}^{m} Y_{i\cdot p}\, Y_{jp} \quad ,$$

wherein r_{ij} and r_{ji} are matrix elements and i and j are integers from 1 to n.

Claim 19 (Currently Amended): The method of controlling semiconductor manufacturing equipment of claim 18, wherein said generating a Mahalanobis distance ~~the value calculator~~ uses an equation

$$D^2 = \frac{1}{n}\sum_{i=1}^{n}\sum_{j=1}^{n} a_{ij}Y_iY_j,$$

wherein D is the Mahalanobis distance ~~similarity value~~ and a_{ij} are matrix elements of [[an]] the inverse matrix ~~of the set of matrix elements obtained by the matrix calculator during said obtaining~~.

Claim 20 (Currently Amended): The method of controlling semiconductor manufacturing equipment of claim 23 [[19]], wherein the threshold value is within a range of 2 to 4.

Claims 21-22 (Canceled)

Claim 23 (New): A method of controlling semiconductor manufacturing equipment, comprising:

sampling a plurality of data;

generating a correlation matrix based on the plurality of data;

generating an inverse matrix of the correlation matrix in order to generate a Mahalanobis space;

generating a Mahalanobis distance based on the Mahalanobis space; and

generating a control signal which indicates that an operation of the semiconductor manufacturing equipment should be stopped when the Mahalanobis distance exceeds a threshold value.

Claim 24 (New): The method of controlling semiconductor manufacturing equipment according to claim 23, wherein the plurality of data are sampled based on a light intensity of plasma in a reaction chamber.

Claim 25 (New): The method of controlling semiconductor manufacturing equipment according to claim 23, wherein the plurality of data are sampled based on a change in an impedance of a reaction chamber.

Claim 26 (New): The method of controlling semiconductor manufacturing equipment according to claim 25, wherein the change in the impedance is based on a change in a voltage of a high frequency to be supplied to an electrode in the reaction chamber.

Claim 27 (New): The method of controlling semiconductor manufacturing equipment according to claim 23, wherein the plurality of data are sampled based on a voltage, a current and a phase of a supplied high frequency electric power.